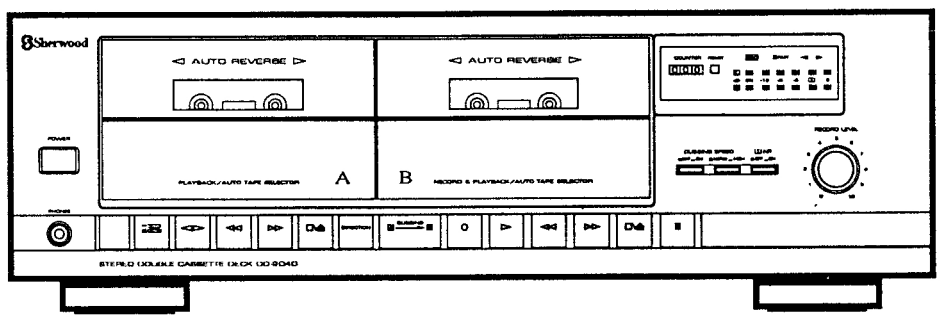
SERVICE MANUAL

DD-2040
STEREO
CASSETTE DECK



■ CONTENTS ■

Safety Precautions ····2
Specifications ····3
Block Diagram ····4
Wiring Diagram ····5
Alignment Procedures ····6
Mechanical Parts List ····10
Exploded View ····11
Printed Circuit Boards ····13
Electrical parts List ····15
IC's Lead Identification and Internal Diagram ···18
Schematic Diagram ····23
Transistors Lead & Identification ····25

Sherwood

SAFETY PRECAUTIONS

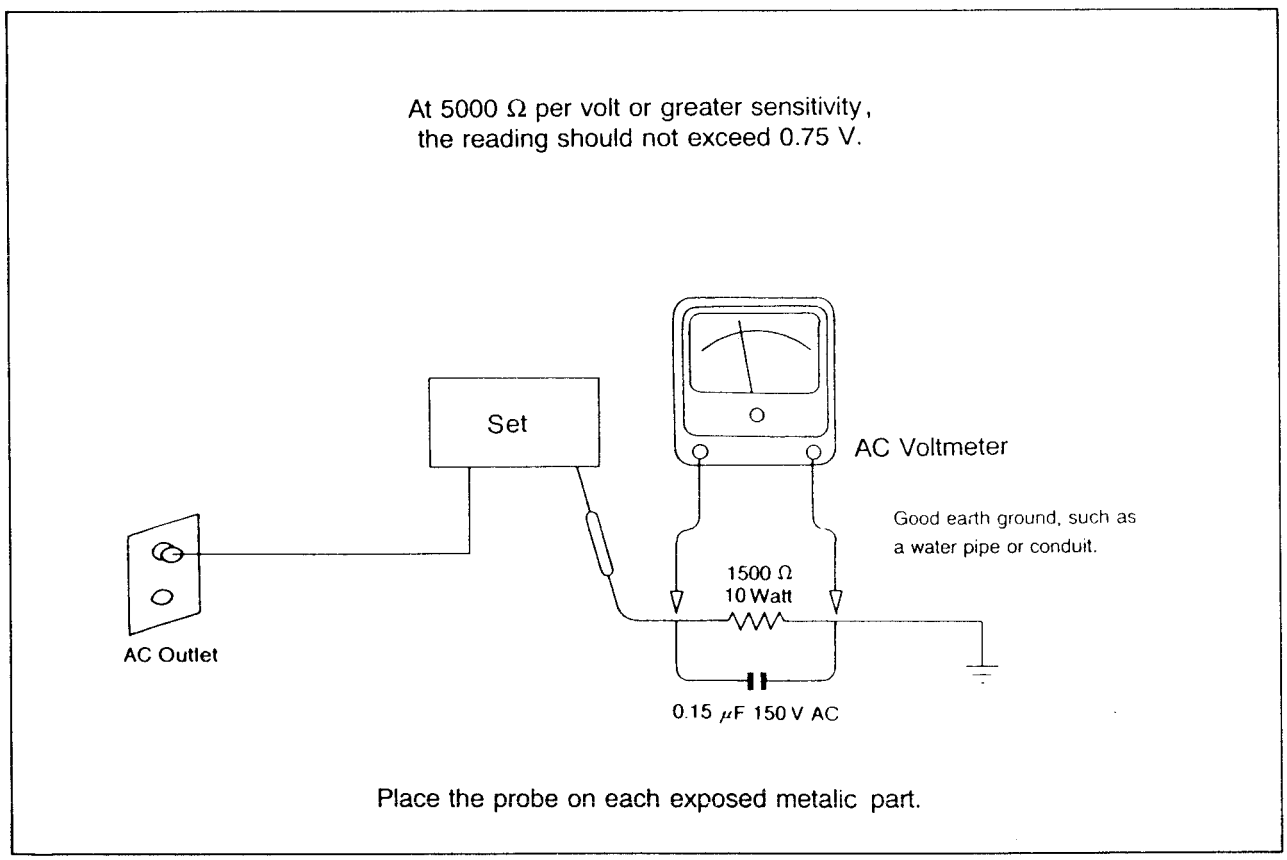
WARNING

Before servicing this unit, familiarize yourself with the following precautions:

1. Many electrical and mechanical parts in this chassis have special safety characteristics that often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltge, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements: electrical components having such features are identified by ⚠ in the schematic diagram and the parts list.

   Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

2. Before returning the set to the customer, always do an AC leakage current check on the exposed metal parts of the cabinet, such as terminals, screw heads, and metal overlays, to be sure the set is safe to operate danger of electrical shock. Plug the AC line cord directly into a 120 V AC outlet (120 V AC version only). (Do not use a line isolation transformer during this check.) Be sure your AC voltmeter has a sensitivity of 5000 Ω per volt or greater. Then connect a 1500 Ω 10 watt resistor, paralleled by a 0.15 μF 150 V AC capacitor, between a known good earth ground (such as a water pipe, or conduit) and the exposed metalic is parts, one at a time. Measure the AC voltage across the combination of a 1500 Ω resistor and a 0.15 μF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metalic part. Voltage measured must not exceed 0.75V RMS. This corresponds to 0.2 mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.


At 5000 Ω per volt or greater sensitivity,
the reading should not exceed 0.75 V.
Set
AC Voltmeter
Good earth ground, such as
a water pipe or conduit.
1500 Ω
10 Watt
AC Outlet
0.15 μF 150 V AC
Place the probe on each exposed metalic part.

SPECIFICATIONS

Type	Soft touch front loading stereo double cassette deck with Dolby NR system.	
Track system	4 tracks, 2 channels stereo playback (Deck A) and Recording / Playback (Deck B)	
Recording system	AC bias system (bias frequency : 105 kHz)	
Erasing system	AC system	
Tape speed	1-7/ 8 (inch/sec.) (4.76 cm/sec.)	
Heads	Hard permalloy recording / playback head x 1 Hard permalloy playback head x 1 Double gap erasing head x 1	
Motor	Electronic governor controlled DC motor	
Wow and flutter	Less than 0.25% (WRMS), 0.30% (DIN)	
Fast winding time	Approximately 120 seconds with C-60 cassette tape	
Frequency Response (-20 dB REC)	Normal tape	30-16,000 Hz, ±5 dB
	CrO_2 tape	35-16,000 Hz, ±5 dB
Signal to noise ratio (Rec / PB) (0 dB Rec/PB)	Dolby NR	62 dB (normal tape)
	(Weighted)	64 dB (CrO_2 tape)
	Dolby NR OFF	53 dB (normal tape)
	(Weighted)	55 dB (CrO_2 tape)
3rd harmonic distortion	Less than 1.5% at 1 kHz, 0 dB REC / PB	
Input sensitivity / Impedance	Line 100 mV/47 kohms	
Output level / Impedance	Line 500 mV/1.2 kohms	
Built-in features	Dolby NR system. Synchronous dubbing High speed dubbing selector LED peak level display (5 LED x 2) Auto tape selector	
Power consumption	14 Watts	
Dimensions	440(W) x 125(H) x 245(D) mm, 170 x 49 x 96 inch.	
Weight(net)	4 kg (8.8 lbs)	

Power Requirment:

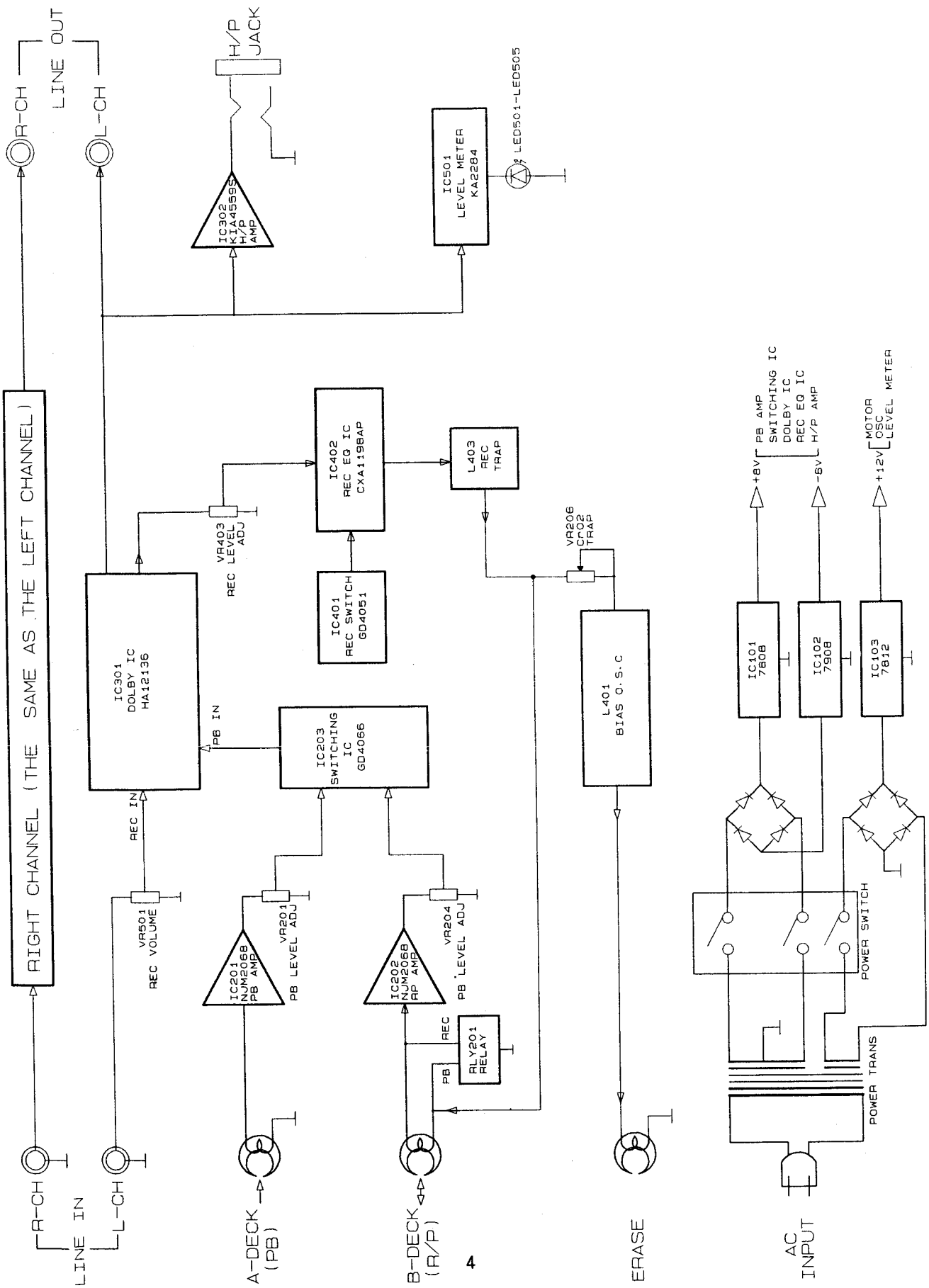
A: 120 V 60 Hz for American/Canadian version
B: 120/220 V, 60/50 Hz for multi– voltage version (switchable)
D: 230 V, 50 Hz German / General European version
E: 240 V, 50 Hz for UK/Austalian version
G: 220 V, 50 Hz for Other Area

Notes :

1. Norminal specs represent the design specs. All unit should be able to approximate these some will exceed and some may drop slight below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit fail to meet limit specs.
2. This manual is based on the American (A) standard, and provieds information on regional circuit modification through the use of alternate schematic diagram or wiring diagram, and information on regional component variations through the use of aprts list. Design and specifications subject to change without notice.

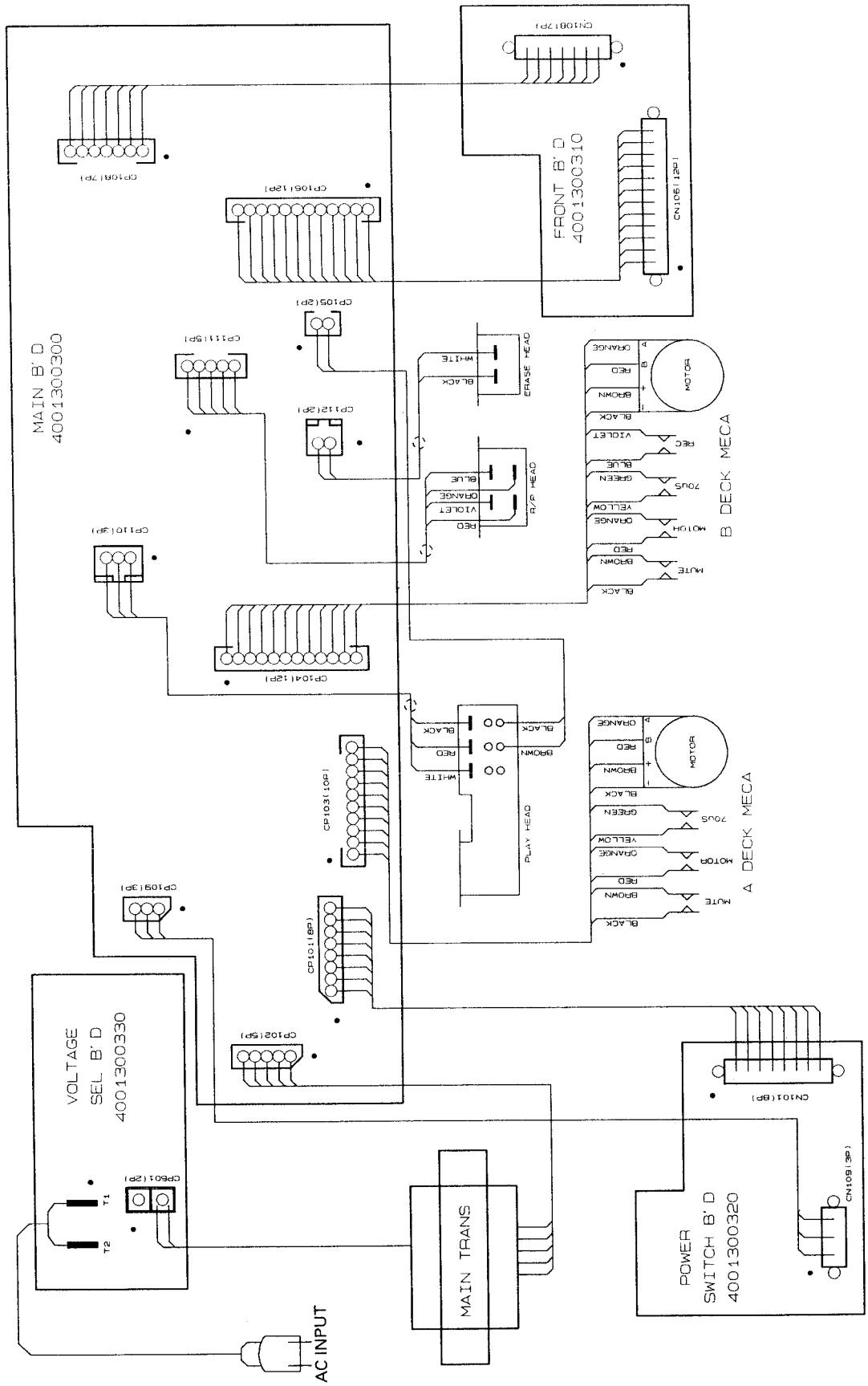
BLOCK DIAGRAM

Model No.: DD-2040



WIRING DIAGRAM

Model No.: DD-2040



ALIGNMENT PROCEDURES

1. Before Measurements and Adjustments

- General Conditions
  The following general conditions apply to the electrical measurements and adjustments unless especially stated otherwise.
- Before making adjustment, operate the appliance for more than 2 minutes.
- Ambient temperature 20°C to 25° C
- Dolby NR tact switch off.
- The voltages are measured connecting to earth.
- Volume control; recording level VR501 max.
- Since head magnetization, dust, accumlation, ect. are likely to introduce error in the various characteristics it is very important that the heads are properly demagnetized and cleaned.
- Use 500 mV (200 nWb/m) for 0 dB as the standard level of the unit. (Line out : fixed)
- Proceed with the recording system adjustment after having finished the playback section adjustment.

Instruments reqiured

- Audio frequency oscillator.
- ACVM or dual channel ACVM. (mV-meter)
- Frequency counter.
- WOW/FLUTTER meter.
- Oscilloscope.

Test Cassette

- TCC-154 ..... Azimuth (12.5 kHz, -20 dB)
- TCC-122 ..... Tape speed. (3 kHz, -10 dB)
- TCC-130 ..... Playback level (Dolby NR ref. tape 400 Hz, 0 dB)
- TCC-185C ..... Playback frequency response
- Reference Tape
  Normal ..... TDK AC-224
  CrO_2 ..... TDK AC-513

2. Playback Section

Adjustments	Test tape	Mode	Apply Signal to	Measure on	Read on	Adjust with	Adjust to
Head Azimuth	TCC-154 12 kHz (A.BEX)	Play (A&B Deck)		Line out	AC mV-meter Oscilloscope	Head adjusting screw	Max *a • Lissajous figure become a straight line with an angle 45 degrees
Playback at high-speed	TCC-122 3 kHz, -10 dB (A. BEX)				Wow and Flutter Meter	B Deck VR104	4500 Hz ±45 Hz
Playback speed normal	TCC-122 3 kHz. -10 dB (A. BEX)	Play (A&B Deck)			Wow and Flutter Meter	B Deck VR103	3000 Hz ±15 Hz *b
Playback senstivity	TCC-130 400 Hz 0dB (A. BEX)				AC mV-meter	A Deck VR201/202 B Deck VR203/204	500 mV *c
Playback frequency response	TCC-185C 12.5 kHz/1 kHz 63 Hz (A. BEX)				AC mV-meter		See graph Fig. 1 frequency responce

3. Recording Section

Adjustments	Test tape	Mode	Apply Signal to	Measure on	Read on	Adjust with	Adjust to
OSC	AC- 513 (TDK)	Rec/Pause		White color lead wire of CP112	Frequency Counter	L401	105 kHz ± 400 Hz
105 kHz trap suppression	AC- 513 (TDK)			TP4 Tp5	AC mV-meter	L402/430	Minimize the reading on ACVM
Bias	CrO_2			TP1 Tp2		VR205/206	72 mV
	Normal					VR401	46 mV
Recording sensitivity	AC-513 (TDK)		400 Hz to Line in	Line out		LF Generator	50 mV
				TP6, TP7		VR402/403	About 6.3 mV
Bias	AC-513 AC-224		400 Hz to Line in	Line out		See target value bias	If it necessary repeat bias adjustment.
			40 Hz - 6.3 kHz Record a number of frequencies. 10 kHz - 12 kHz with the same input voltage. 14 kHz - 16 kHz and play them back to line in.				
19 kHz Suppression				Line out	AC mV-meter	LF Generator	500 mV
		Rec/Pause with Dolby NR on	19 kHz to Line in		AC mV-meter Oscilloscope	L301/302	Minimize the reading on ACVM

Note:

*a. Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleand. Reference below the figure.

*b. The maximum permissibie speed variation ±0.5% . More-over the Wow and Flutter can be read. This value should not be exceed 0.2%.

*c. The voltage on Line out should be 500 mV±20 mV. If not it reduce the LF signal (bias disabled) as many as the reading was too low or too high by VR201, VR202, VR203, VR204.

*d. When the channel is adjusted, this may slightly affect the adjustment of the other channel. If the adjustment is correct, the frequency response curve will be similar to curve b in figure 2, distortion below 3%.

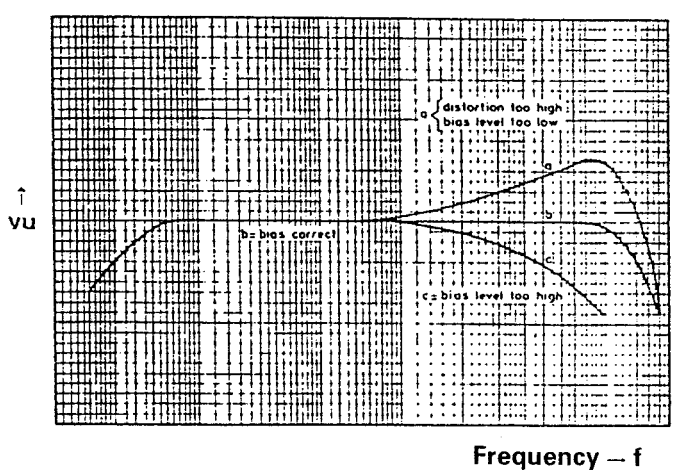


Fig.2

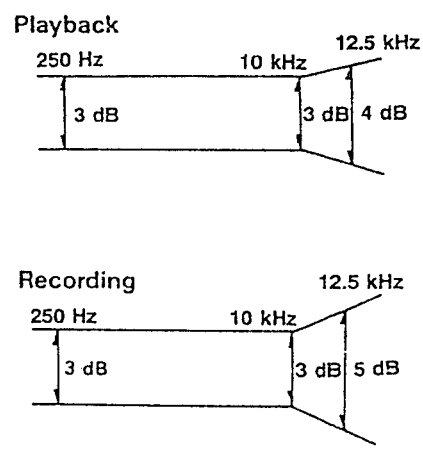
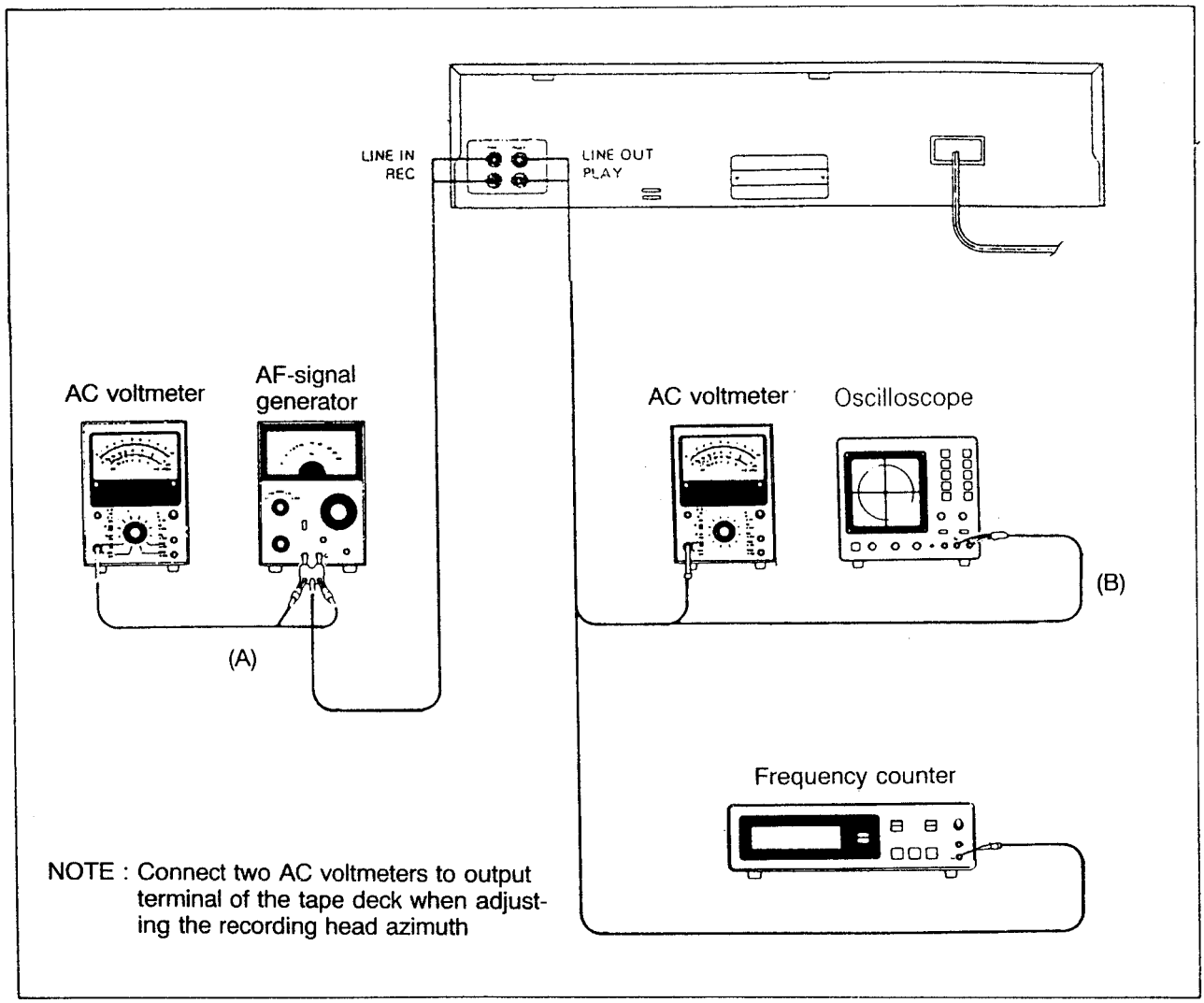
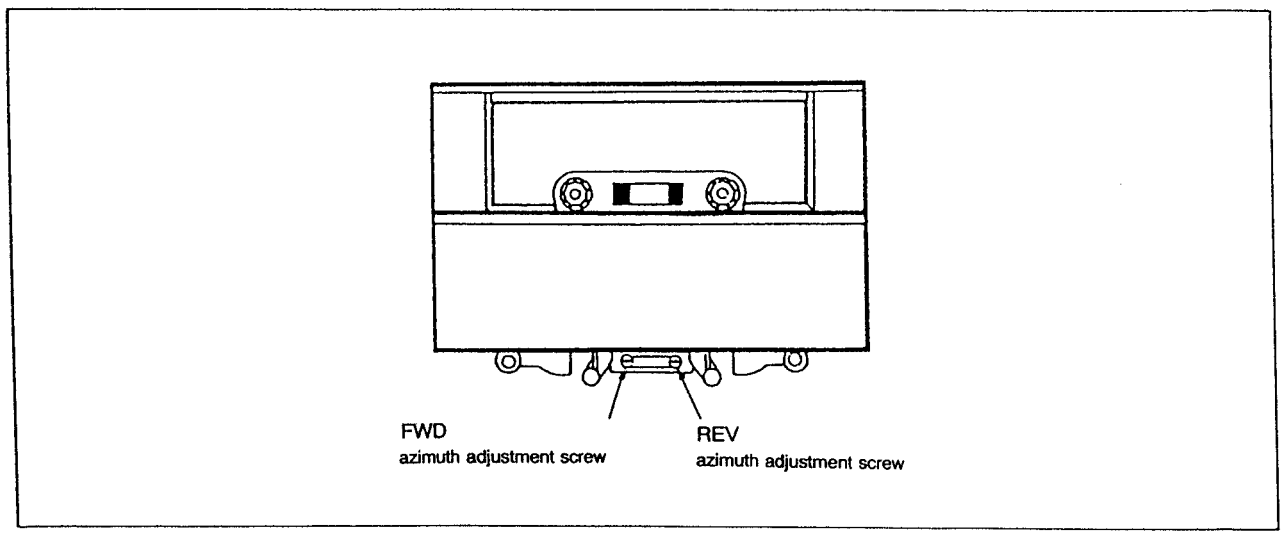


Fig.1 Allowable Plyaback/Recording Frequency Response Zone

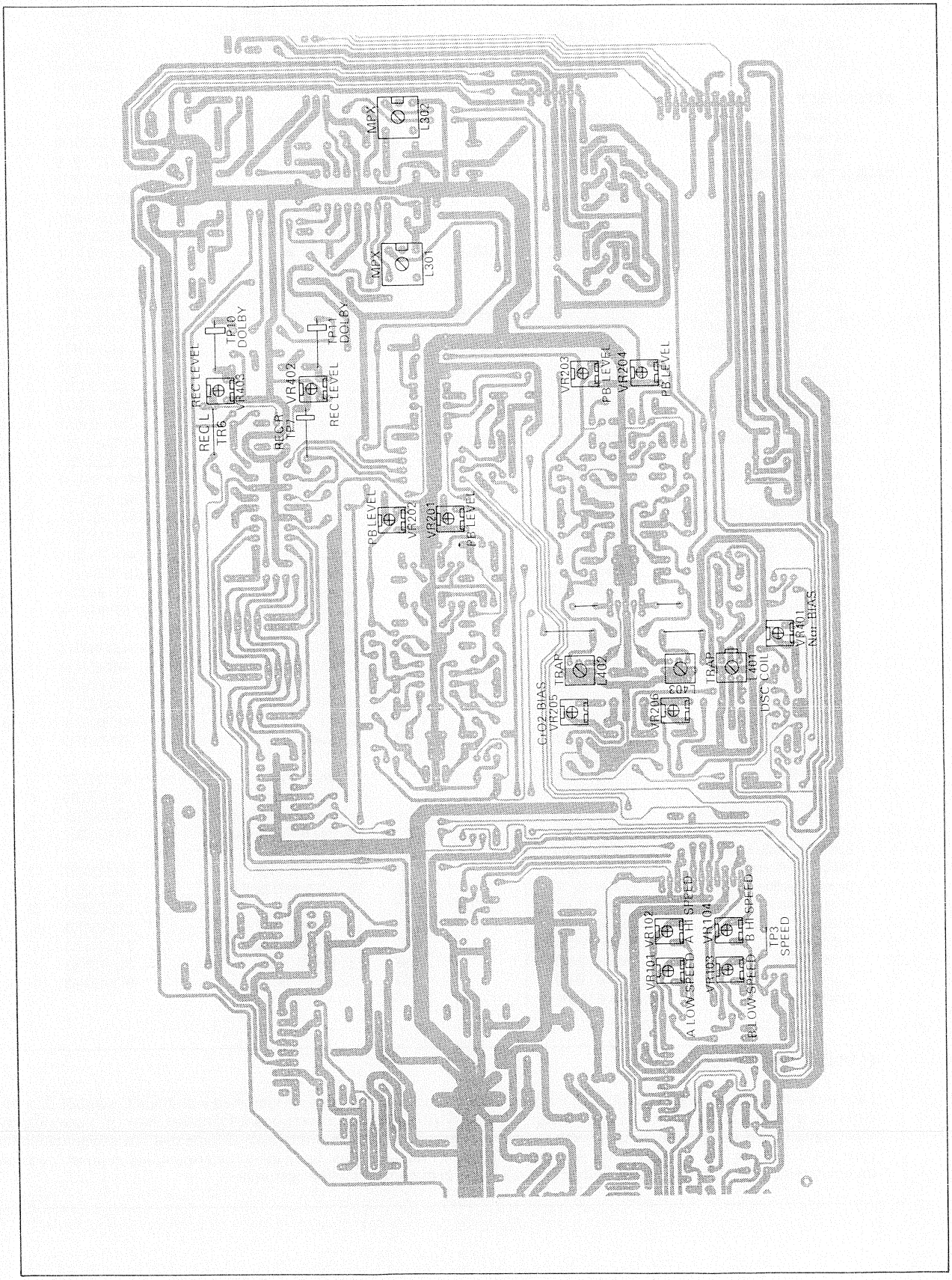
4. Test Equipment Connections



5. Head Azimuth Adjustment



6. Ajustments Point



MECHANICAL PARTS LIST

Ref.No.	Description	Part No.	Q'ty	Version
PACKAGE				
1	Film Sofe PE	9715000120	1	
	Cushion Poly	9722026910	1	
	Box Carton	049605172141	1	
ACESSORIES				
	Cord RCA 2P	4328200510	1	
	Manual Instruction	9007018010	1	A
	Manual Instruction	9007018011	1	D
CABINET & CHASSIS				
1	Window Led, Acryl, Smoke	048555049411	1	
2	Inlay Led, Acryl, Smoke	048535042711	1	
3	Window Door "A", Acryl, Smoke	048555049311	1	
	Window Door "A", Acryl, Smoke	048555049313	1	KS(Only)
4	Window Door "B", Acryl, Smoke	048555049312	1	
5	Door Deck "A", ABS, Black	048562005511	1	
	Door Deck "A", ABS, Black	048562005513	1	KS(Only)
6	Door Deck "B", ABS, Black	048562005512	1	
	Door Deck "B", ABS, Black	048562005514	1	KS(Only)
7	Lid Cassette, ABS, Black	8562002810	2	
8	Knob Rotary, ABS, Black	048543043611	1	
9	Button Cap "A", ABS, Black	048543061411	1	
10	Button Cap "B", ABS, Black	048545125411	1	
	Button Cap "B", ABS, Black	048545125412	1	KS(Only)
11	Button Cap "C", ABS, Black	8545125510	1	
12	Knob Push Power, ABS, Black	8545074330	1	
13	Spring Button	6555004380	1	
14	Badge Sherwood, ABS, Gold	048535039811	1	
	Badge Inkel, ABS, Gold	048535039711	1	KS(Only)
15	Panel Front, ABS, Black	048501034111	1	
	Panel Front, ABS, Black	048501034112	1	KS(Only)
16	Damper Oil, ABS, Black	6308001630	2	
17	Spring Door	6555607210	2	
18	Label Silver	9057079250	2	
19	Knob Push, ABS, Black	8545125610	3	
20	Shield Fence	6165148710	1	
21	Volume REC	3208060210	1	
22	Switch Push 3Key	4628054210	1	
23	Holder Led, ABS, Black	6043008210	1	
24	Counter Tape	5318003610	1	
25	Bracket Counter	6505099010	1	
26	Belt, NR, Black	7165000610	1	
27	Button Mode, ABS, Black	048545125311	1	
28	Button Play Auto, ABS, Black	048545125319	1	
29	Button Rew, ABS, Black	048545125313	2	
30	Button F.F, ABS, Black	048545125314	2	
31	Button Stop/Eject, ABS, Black	048545125315	2	
32	Button Direction, ABS, Black	048545125316	1	
	Button Direction, ABS, Black	048545125321	1	KS(Only)
33	Button Rec, ABS, Black	048545125317	1	
34	Button Play, ABS, Black	048545125312	1	
35	Button Pause, ABS, Black	048545125318	1	
36	Shield Phone	6165136410	1	
37	Jack Phone, Gold	4438005010	1	
38	Switch Push Power	4628035210	1	
39	Guide Holder, ABS, Black	8525009310	1	
40	Deck Mecha "A"	5708012810	1	
41	Deck Mecha "B"	5708012710	1	
42	Shield Ground	6165148810	1	
43	Cover Top	046122020311	1	
44	Frame Side "L"	6122632840	1	
45	Frame Side "R"	6123620120	1	
46	Cover Button	6122416080	1	
47	Foot, ABS, Gold	046033102511	2	
	Foot, ABS, Gold	046033102611	2	KS(Only)
48	Foot, ABS, Black	6033102510	2	A, B
	Foot, ABS, Black	046033102511	2	C,D,E,F,G,KS
49	Jack RCA, 4P	4438103110	1	
50	Heatsink Regulator TR.	7505206120	1	
51	Heatsink Regulator TR.	7505202410	2	
52	Selector Voltage	4618006610	1	B(Only)
53	⚠ AC Outlet	4448103210	1	A,B
	⚠ AC Outlet	4448103610	1	C,D,F,G
	⚠ AC Outlet	4448105510	1	KS
54	Nut Flange M4	8209540011	2	
55	⚠ Power Transformer, 120V 60Hz	2828000427	1	A
	Power Transformer, 230 V/50 Hz	2828001347	1	D
56	Chassis Back	046102041811	1	KS
	Chassis Back	046102041821	1	A
	Chassis Back	046102041831	1	B
	Chassis Back	046102041841	1	C
	Chassis Back	046102041851	1	D
	Chassis Back	046102041861	1	E
	Chassis Back	046102041871	1	F
	Chassis Back	046102041881	1	G
57	Stopper Cord	6518000310	1	KS
	Stopper Cord	6518000710	1	A,B
	Stopper Cord	6518000111	1	C,D,E,F,G
58	⚠ Cord AC Power	4308007310	1	KS
	⚠ Cord AC Power	4308001410	1	A,B
	⚠ Cord AC Power	4308000430	1	C,D,E,F
	⚠ Cord AC Power	4308007610	1	G
59	Adapter	4428300410	1	B
60	Fastener	6528301710	1	
	P.C. Board Main	4001300300	1	
	P.C. Board Front	4001300310	1	
	P.C. Board Power Switch	4001300320	1	
	P.C. Board Voltage Selector	4001300330	1	
S1	Screw #2BTC 3x8B	8109230083	27	
S2	Screw #2WPTC 3x8B	8159230081	10	
S3	Screw #2BTC 3x8Y	8109230081	3	
S4	Screw #2BTC 3x10Y	8109230101	5	
S5	Screw WSAM 4x8B	8159440083	6	
S6	Screw #2BTC 3x6B	8109230063	8	
S7	Screw #1PT 3x10B	8119130103	5	

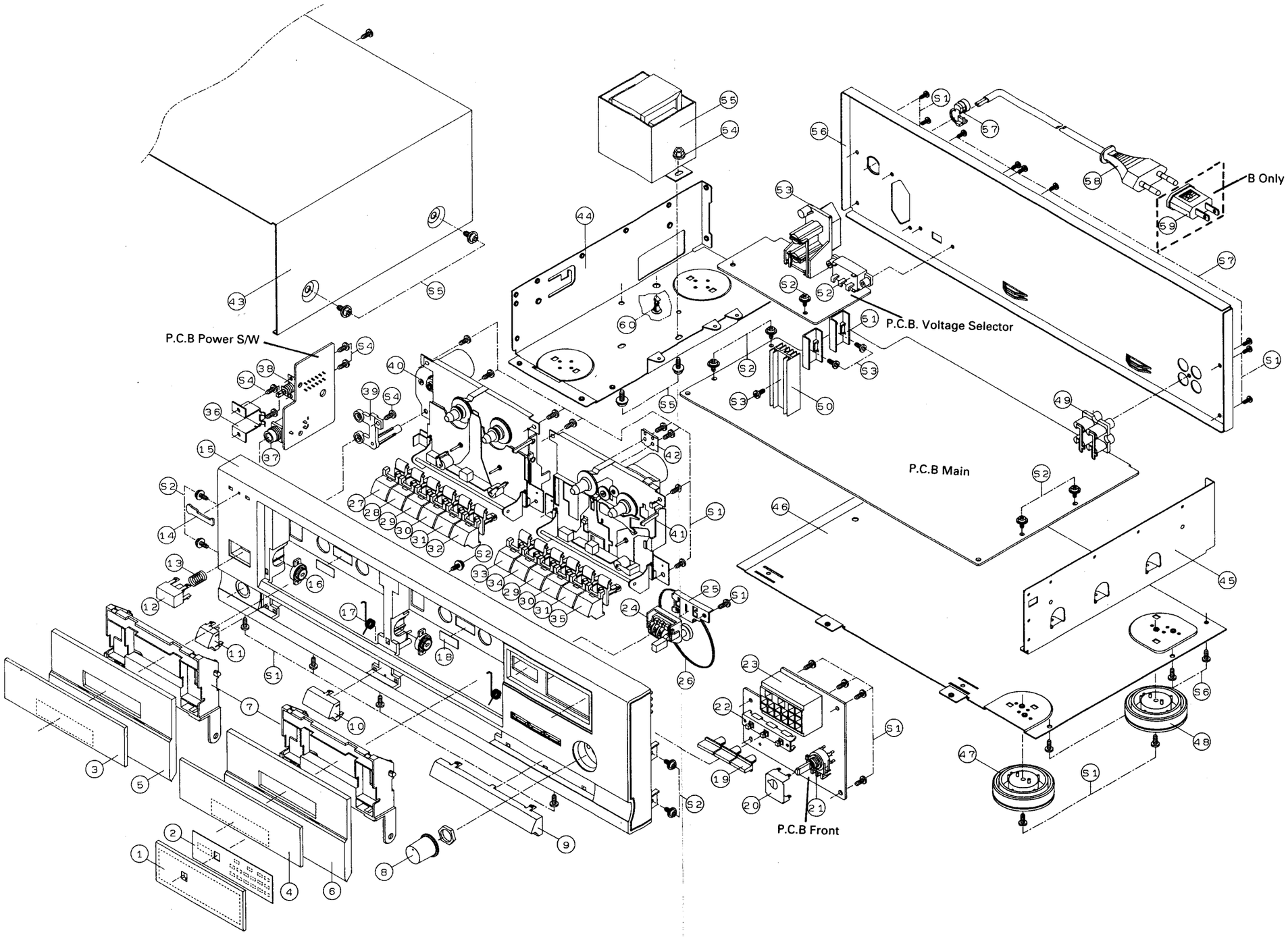
PRODUCT SAFETY NOTICE

Each precaution in this manual should be follower during servicing. Components identified with the IEC symbol ⚠ in the parts list and the safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

EXPLODED VIEW

CABINET & CHASSIS

Model No. : DD-2040

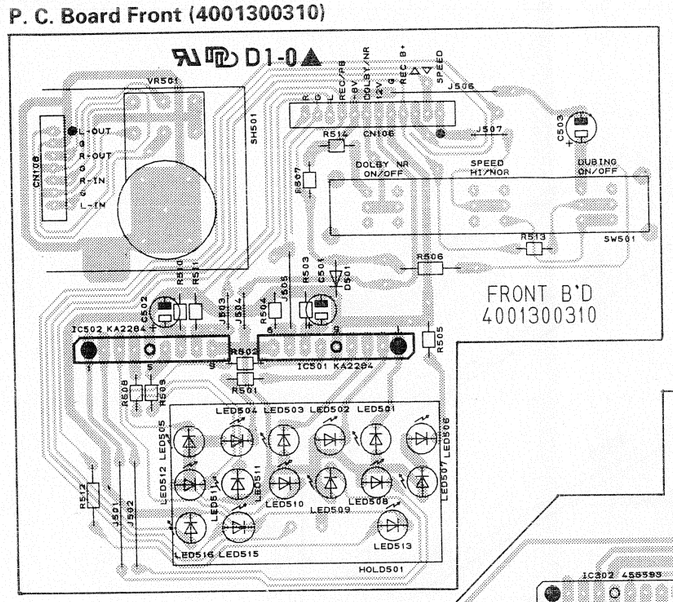


11

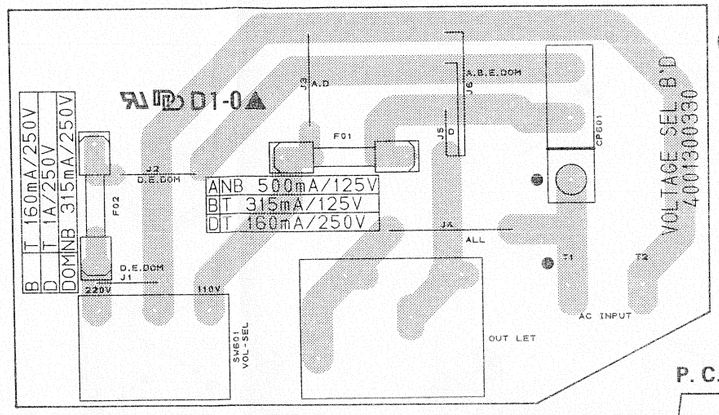
12

PRINTED CIRCUIT BOARDS

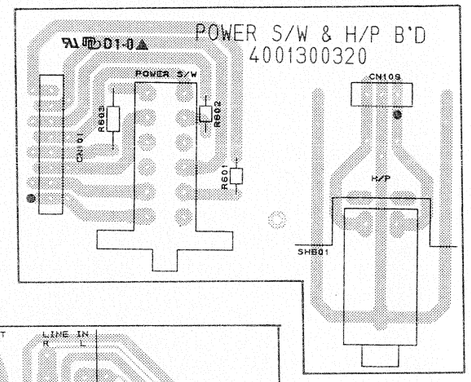
P. C. Board Front (4001300310)



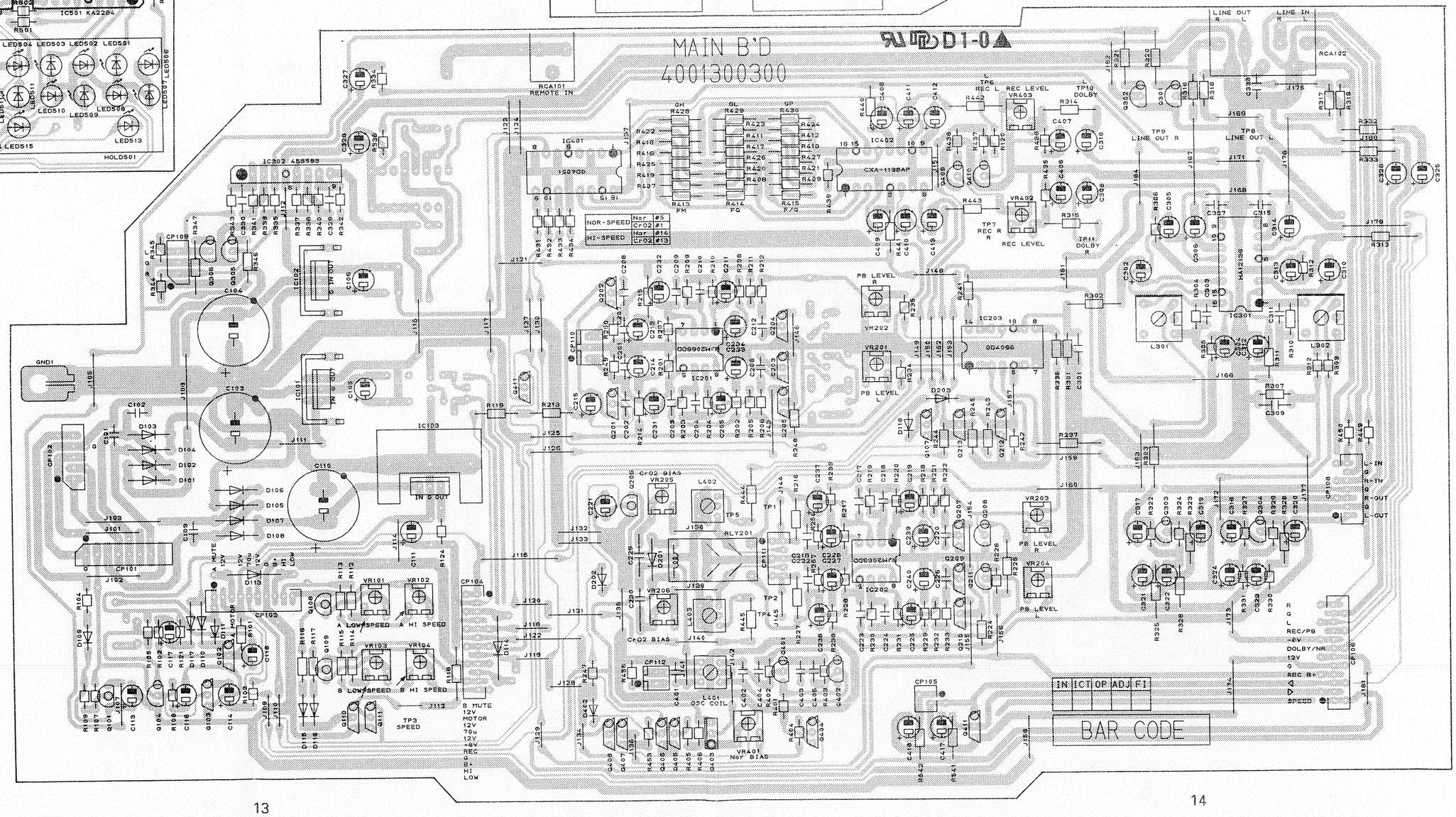
P. C. Board Voltage Selector (4001300330)



P. C. Board Power S/W (4001300320)



P. C. Board Main (4001300300)



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE : Products marked with ⚠ have special characteristics important to safet If you replace of these components, read carefully the product safety notice in this manual.
Don't degrade the safety of the product through improper servicing.
Resistor/Capacitor Tolerance, D : (±0.5%), J : (±5%), K : (±10%), M : (±20%), Z : (+80, -20%).

Ref.No.	Description				Part No.	Q'ty	Version
	A'ssy P.C. Board Main						
49	Jack RCA, 4P				4438103110	1	
50	Heatsink Regulator TR				7505206120	1	
51	Heatsink Regulator TR				7505202410	2	
C101/C102	Mylar	0.047	µF	100 V J	3679473120	2	
⚠ C103/C104	Electrolytic SG	2200	µF	25 V M	3409322249	2	
C105/C106	Electrolytic SG	100	µF	10 V M	3479310121	2	
C107~C108	Not Used !						
C109	Mylar	0.047	µF	100 V J	3679473120	1	
⚠ C110	Electrolytic SG	3300	µF	25 V M	3409333249	1	
C111	Electrolytic SG	10	µF	50 V M	3479310071	1	
C112	Not Used !						
C113	ElectrolytiC SA	100	µF	16 V M	3409210131	1	
C114	ElectrolytiC SG	10	µF	50 V M	3479310071	1	
C115	Not Used !						
C116/C117	Electrolytic SG	10	µF	50 V M	3479310071	2	
C118	Electrolytic SG	47	µF	16 V M	3479347031	1	
C201/C202	Ceramic Tubular	470	pF	50 V K	3519471935	2	
C203	Ceramic Tubular	100	pF	50 V K	3519101935	1	
C204	Mylar	0.0082	µF	100 V J	3679822120	1	
C205	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C206	Mylar	0.027	µF	100 V J	3679273120	1	
C207/C208	Ceramic Tubular	470	pF	50 V K	3519471935	2	
C209	Ceramic Tubular	100	pF	50 V K	3519101935	1	
C210	Mylar	0.0082	µF	100 V J	3679822120	1	
C211	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C212	Mylar	0.027	µF	100 V J	3679273120	1	
C213/C214	Electrolytic SG	100	µF	10 V M	3479310121	2	
C215	Electrolytic SG	2.2	µF	50 V M	3479322971	1	
C216	Ceramic Tubular	470	pF	50 V K	3519471935	1	
C217	Ceramic Tubular	100	pF	50 V K	3519101935	1	
C218	Mylar	0.0082	µF	100 V J	3679822120	1	
C219	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C220	Mylar	0.027	µF	100 V J	3679273120	1	
C221	Electrolytic SG	22	µF	25 V M	3479322041	1	
C222	Ceramic Tubular	470	pF	50 V K	3519471935	1	
C223	Ceramic Tubular	100	pF	50 V K	3519101935	1	
C224	Mylar	0.0082	µF	100 V J	3679822120	1	
C225	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C226	Mylar	0.027	µF	100 V J	3679310121	1	
C227/C228	Electrolytic SG	100	µF	10 V M	3479310121	2	
C229/C230	Ceramic Tubular	560	pF	50 V K	3519561935	2	
C231/C232	Electrolytic SG	1	µF	50 V M	3479310971	2	
C233/C234	Electrolytic SG	100	µF	10 V M	3479310121	2	
C237/C238	Electrolytic SG	1	µF	50 V M	3479310971	2	
C239/C240	Electrolytic SG	100	µF	10 V M	3479310121	2	
C301	Ceramic Tubular	220	pF	50 V K	3519221935	1	
C302	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C303	Mylar	0.0039	µF	100 V J	3679392120	1	
C304	Electrolytic SG	100	µF	10 V M	3479310121	1	
C305	Electrolytic SG	22	µF	25 V M	3479322041	1	
C306	Electrolytic SG	10	µF	50 V M	3479310071	1	
C307	Ceramic Disc	0.1	µF	50 V Z	3579104530	1	
C308	Electrolytic SG	3.3	µF	50 V M	3479333971	1	
C309	Ceramic Tubular	220	pF	50 V K	3519221935	1	
C310	Electrolytic SG	4.7	µF	50 V M	3479347971	1	
C311	Mylar	0.0039	µF	100 V J	3679392120	1	
C312	Electrolytic SG	100	µF	10 V M	3479310121	1	
C313	Electrolytic SG	22	µF	25 V M	3479322041	1	
C314	Electrolytic SG	10	µF	50 V M	3479310071	1	
C315	Ceramic Disc	0.1	µF	50 V Z	3579104530	1	
C316	Electrolytic SG	3.3	µF	50 V M	3479333971	1	
C317-C320	Electrolytic SG	4.7	µF	50 V M	3479347971	4	
C321-C324	Electrolytic SG	100	µF	10 V M	3479310121	4	
C325-C328	Electrolytic SG	10	µF	50 V M	3479310071	4	
C329/C330	Ceramic Tubular	330	pF	50 V K	3519331935	2	
C401	Mylar	0.0022	µF	100 V J	3679222120	1	
C402	Mylar	0.01	µF	100 V J	3679103120	1	
C403	Mylar	0.022	µF	100 V J	3679224120	1	
C404/C405	Mylar	0.056	µF	100 V J	3679562120	2	
C406/C407	Electrolytic SG	1	µF	50 V M	3479310971	2	
C408/C409	Electrolytic SG	100	µF	10 V M	3479310121	2	
C410/C411	Electrolytic SG	10	µF	50 V M	3479310071	2	
C412/C413	Electrolytic SG	3.3	µF	50 V M	3479333971	2	
C414~C416	Not Used !						
C417/C418	Electrolytic SG	10	µF	50 V M	3479310071	2	
CN103	Lead Ass'y, 10P, 250 mm, from Deck Mecha				435210250032	1	
CN104	Lead Ass'y, 12P, 250 mm, from Deck Mecha				435212250032	1	
CN105	Lead Ass'y, 2P, 240 mm, from Deck Mecha				436202400032	1	
CN107	Not Used !						
CN110	Lead Ass'y, 5P, 350 mm, from Mecha Head				435205355052	1	
CN111	Lead Ass'y, 3P, 350 mm, from Mecha Head				436203355031	1	
CN112	Lead Ass'y, 2P, 260 mm, from Mecha Head				436202265031	1	
CP101	Wafer, 8P, 2.5 mm				4428505510	1	
CP102	Wafer, 5P, 2.5 mm				4428506910	1	
CP103	Wafer, 10P, 2.0 mm				4428516910	1	
CP104	Wafer, 12P, 2.0 mm				4428517110	1	
CP105	Wafer, 2P, 2.0 mm				4428516110	1	
CP106	Wafer, 12P, 2.0 mm				4428517110	1	
CP107	Not Used !						
CP108	Wafer, 7P, 2.0 mm				4428516610	1	
CP109	Wafer, 3P, 2.5 mm				4428505710	1	
CP110	Wafer, 3P, 2.5 mm				4428517610	1	
CP111	Wafer, 5P, 2.0 mm				4428516410	1	
CP112	Wafer, 2P, 2.5 mm				4428517510	1	
⚠ D101-D108	1N4002, Rectifier				2258100135	8	
D109-D111	1N4148M, Switching				2058322101	3	
D112	Not Used !						
⚠ D113/D114	1N4002, Rectifier				2258100135	2	
D115-D118	1N4148M, Switching				2058322101	4	
⚠ D201	1N4002, Rectifier				2258100135	1	
D202/D203	1N4148M, Switching				2058322101	2	
D402	1N4148M, Switching				2058322101	1	
IC101	KA 7808, Regulator				2168602101	1	
IC102	KA 7908, Regulator				2168602102	1	
IC103	KIA78012AP/KIA7812P, Regulator				2168602104	1	
IC201/IC202	NJM2068DD				2168020106	2	
IC203	GD4066B				2138001101	1	
IC301	HA12136A				2168011133	1	
IC302	KIA4559S/KIA75559S				2168206103	1	
IC401	MC14051BCP				2138009134	1	
IC402	CXA 1198AP				2168022124	1	
L301/L302	Coil Filter, MPX FB-10D				2658301120	2	
L401	Coil, OSC 85 kHz				2638601340	1	
L402/L403	Coil, RES Trap FB-7SG				2658501080	2	
Q101	MPSA55				2208206112	1	
Q102/Q103	DTC114YS				2208622106	2	
Q104	KTC1815Y/BKTC3198, NPN, Silicon				2208606104	1	
Q107	DTC114YS				2208622106	1	
Q108/Q109	MPSA56Y, PNP, Silicon				2208206113	2	
Q110-Q112	DTC114YS				2208622106	3	
Q201-Q204	DTC114TS				2208622108	4	
Q205	DTC114YS				2208622106	1	
Q206	MPSA06Y, NPN, Silicon				2208606114	1	
Q207	DTC114YS				2208622106	1	
Q208	KTD1302B, NPN, Silicon				2208606112	1	
Q209	DTC114TS				2208622108	1	
Q210	DTC114YS				2208622106	1	
Q211	KTD1302B, NPN, Silicon				2208606112	1	
Q212/Q213	DTC114YS				2208622106	2	
Q301/Q302	KTD1302B, NPN, Silicon				2208606112	2	
Q303/Q304	KTC1815Y/BKTC3198, NPN, Silicon				2208606104	2	
Q305/Q306	KTD1302B, NPN, Silicon				2208606112	2	
Q401/Q402	KTC2236AY, NPN, Silicon				2228407117	2	
Q403	KTB1366Y/2SB1366Y, PNP, Silicon				2028406124	1	
Q404-Q408	DTC114YS				2208622106	5	
Q409/Q410	KTD1302B, NPN, Silicon				2208606112	2	
Q411	DTC114YS				2208622106	1	
R101	Carbon Film	10	kohm	1/5 W J	3069103970	1	
R102	Carbon Film	4.7	kohm	1/5 W J	3069472970	1	
R103	Carbon Film	10	kohm	1/5 W J	3069103970	1	
R104	Carbon Film	2.2	ohm	1/5 W J	3069229970	1	
R105	Carbon Film	100	kohm	1/5 W J	3069104970	1	
R106	Not Used !						

Ref.No.	Description	Part No.	Q'ty	Version
R107	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R108	Carbon Film 10 ohm 1/5 W J	3069100970	1	
R109	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R110~R111	Not Used !			
R112-R115	Carbon Film 150 ohm 1/5 W J	3069151970	4	
R116/R117	Carbon Film 15 kohm 1/5 W J	3069153970	2	
R118	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R119/R120	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R121	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R122~R123	Not Used !			
R124	Carbon Film 1 ohm 1/5 W J	3069109970	1	
R201	Carbon Film 150 kohm 1/5 W J	3069154970	1	
R202	Carbon Film 91 ohm 1/5 W J	3069910970	1	
R203	Carbon Film 270 kohm 1/5 W J	3069274970	1	
R204	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R205/R206	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R207	Carbon Film 150 kohm 1/5 W J	3069154970	1	
R208	Carbon Film 91 ohm 1/5 W J	3069910970	1	
R209	Carbon Film 270 kohm 1/5 W J	3069274970	1	
R210	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R211/R212	Carbon Film 3 ohm 1/5 W J	3069302970	2	
R213	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R214-R216	Carbon Film 100 ohm 1/5 W J	3069101970	3	
R217	Carbon Film 150 kohm 1/5 W J	3069154970	1	
R218	Carbon Film 91 ohm 1/5 W J	3069910970	1	
R219	Carbon Film 270 kohm 1/5 W J	3069274970	1	
R220	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R221/R222	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R224	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R225/R226	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R227	Carbon Film 100 ohm 1/5 W J	3069101970	1	
R228	Carbon Film 150 kohm 1/5 W J	3069154970	1	
R229	Carbon Film 91 ohm 1/5 W J	3069910970	1	
R230	Carbon Film 270 kohm 1/5 W J	3069274970	1	
R231	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R232/R233	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R234-R237	Carbon Film 33 kohm 1/5 W J	3069333970	4	
R238/R239	Carbon Film 100 ohm 1/5 W J	3069101970	2	
R240	Not Used !			
R241	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R242	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R243	Carbon Film 6.8 kohm 1/5 W J	3069682970	1	
R244/R245	Carbon Film 10 kohm 1/5 W J	3069103970	2	
R246	Not Used !			
R247	Carbon Film 3 kohm 1/5 W J	3069302970	1	
R248	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R249/R205	Carbon Film 270 kohm 1/5 W J	3069274970	2	
R256/R257	Carbon Film 270 kohm 1/5 W J	3069274970	2	
R301	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R302	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R303	Carbon Film 2.4 kohm 1/5 W J	3069242970	1	
R304	Carbon Film 6.8 kohm 1/5 W J	3069682970	1	
R305	Carbon Film 56 ohm 1/5 W J	3069560970	1	
R306	Carbon Film 18 kohm 1/5 W J	3069183970	1	
R307	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R308	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R309	Carbon Film 2.4 kohm 1/5 W J	3069242970	1	
R310	Carbon Film 6.8 kohm 1/5 W J	3069682970	1	
R311	Carbon Film 56 ohm 1/5 W J	3069560970	1	
R312	Carbon Film 18 kohm 1/5 W J	3069183970	1	
R313	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R314/R315	Carbon Film 4.7 kohm 1/5 W J	3069472970	2	
R316/R317	Carbon Film 1.5 kohm 1/5 W J	3069152970	2	
R318/R319	Carbon Film 22 kohm 1/5 W J	3069223970	2	
R320/R321	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R322	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R323	Carbon Film 39 kohm 1/5 W J	3069393970	1	
R324	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R325/R326	Carbon Film 470 ohm 1/5 W J	3069471970	2	
R327	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R328	Carbon Film 39 kohm 1/5 W J	3069393970	1	
R329	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R330/R331	Carbon Film 470 ohm 1/5 W J	3069471970	2	
R332-R334	Carbon Film 33 kohm 1/5 W J	3069333970	3	
R335	Carbon Film 12 kohm 1/5 W J	3069123970	1	
R336	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R337	Carbon Film 12 kohm 1/5 W J	3069123970	1	
R338/R339	Carbon Film 1 kohm 1/5 W J	3069102970	2	
R340/R341	Carbon Film 2.7 kohm 1/5 W J	3069272970	2	
R342/R343	Carbon Film 1 kohm 1/5 W J	3069102970	2	
R344/R345	Carbon Film 100 kohm 1/5 W J	3069104970	2	
R346/R347	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R401	Carbon Film 4.7 ohm 1/5 W J	3069479970	1	
R402/R403	Carbon Film 33 kohm 1/5 W J	3069333970	2	
R404	Carbon Film 5.1 kohm 1/5 W J	3069512970	1	
R405	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R406	Carbon Film 2.7 kohm 1/5 W J	3069272970	1	
R407	Carbon Film 270 kohm 1/5 W J	3069274970	1	
R408	Carbon Film 82 kohm 1/5 W J	3069823970	1	
R409	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R410	Carbon Film 15 kohm 1/5 W J	3069153970	1	
R411	Carbon Film 18 kohm 1/5 W J	3069183970	1	
R412	Carbon film 24 kohm 1/5 W J	3069243970	1	
R413	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R414	Carbon Film 56 kohm 1/5 W J	3069563970	1	
R415	Carbon Film 120 kohm 1/5 W J	3069124970	1	
R416	Carbon Film 43 kohm 1/5 W J	3069433970	1	
R417	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R418	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R419	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R420/R421	Carbon Film 120 kohm 1/5 W J	3069124970	2	
R422	Carbon Film 75 kohm 1/5 W J	3069753970	1	
R423	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R424	Carbon Film 68 kohm 1/5 W J	3069683970	1	
R425	Carbon Film 220 kohm 1/5 W J	3069224970	1	
R426	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R427	Carbon Film 120 kohm 1/5 W J	3069124970	1	
R428/R429	Carbon Film 18 kohm 1/5 W J	3069183970	2	
R430	Carbon Film 39 kohm 1/5 W J	3069393970	1	
R431	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R432	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R433	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R434	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R435/R436	Carbon Film 2.2 kohm 1/5 W J	3069222970	2	
R437/R438	Carbon Film 3 kohm 1/5 W J	3069302970	2	
R439	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R440/R441	Carbon Film 33 ohm 1/5 W J	3069330970	2	
R442/R443	Carbon Film 10 kohm 1/5 W J	3069103970	2	
R444/R445	Carbon Film 5.6 kohm 1/5 W J	3069562970	2	
R449/R540	Carbon Film 33 kohm 1/5 W J	3069333970	2	
R453	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R456	Carbon Film 1 ohm 1/5 W J	3069109970	1	
⚠ RLY201	Relay, G5V-2H1	5528040001	1	
VR101	Semi Fixed Resistor, 1 kohm(B)	3248010253	1	
VR102	Semi Fixed Resistor, 2 kohm(B)	3248020253	1	
VR103	Semi Fixed Resistor, 1 kohm(B)	3248010253	1	
VR104	Semi Fixed Resistor, 2 kohm(B)	3248020253	1	
VR201-204	Semi Fixed Resistor, 10 kohm(B)	3248010353	4	
VR205/206	Semi Fixed Resistor, 50 kohm(B)	3248050353	2	
VR401	Semi Fixed Resistor, 50 kohm(B)	3248050353	1	
VR402/403	Semi Fixed Resistor, 20 kohm(B)	3248020353	2	
	Terminal Ground	4235007210	1	
	Pin Solder	4228001410	2	

A'ssy P.C. Board Front

21	Volume REC	3208060210	1	
22	Switch Push 3Key	4628054210	1	
23	Holder Led, ABS, Black	6043008210	1	
C501-C503	Electrolytic SG 10 µF 50 V M	3479310071	3	
CN106	Lead Ass'y, 12P, 160mm	436213163332	1	
CN108	Lead Ass'y, 7P, 200mm	436207203332	1	
D501	1N4148M, Switching	2058322101	1	
IC501/502	KA2284	2168200106	2	
LED501-503	LED, SLR-34YCF25, Yellow	2371124501	3	
LED504/505	LED, SLR-34URCF25, Red	2371124701	2	
LED506-510	LED, SLR-34YCF25, Yellow	2371124501	5	
LED511-513	LED, SLR-34URCF25, Red	2371123701	3	
LED514	Not Used !			
LED515/516	LED, SLR-34GCF25, Green	2371124301	2	
R501/R502	Carbon Film 1.5 kohm 1/5 W J	3069152970	2	
R503	Carbon Film 10 kohm 1/5 W J	3069103970	1	

	Ref.No.	Description		Part No.	Q'ty	Version
	R504	Carbon Film	5.6 kohm 1/5 W J	3069562970	1	
	R505	Carbon Film	560 ohm 1/5 W J	3069561970	1	
	R506/R507	Carbon Film	33 kohm 1/5 W J	3069333970	2	
	R508/R509	Carbon Film	1.5 kohm 1/5 W J	3069152970	2	
	R510	Carbon Film	10 kohm 1/5 W J	3069103970	1	
	R511	Carbon Film	5.6 kohm 1/5 W J	3069562970	1	
	R512-R514	Carbon Film	1 kohm 1/5 W J	3069102970	3	
	R515-R540	Not Used !				
	R541/R542	Carbon Film	1.5 kohm 1/5 W J	3069152970	2	
		A'ssy P.C. Board Power S/W				
	37	Jack Phone, Gold		4438005010	1	
	38	Switch Push Power		4628035210	1	
	CN101	Lead Ass'y, 8P, 220mm		436108223331	1	
	CN109	Lead Ass'y, 3P, 220mm		436103223331	1	
⚠	R601/R602	Carbon Film	3.3 ohm 1/5 W J	3069339970	2	
⚠	R603	Carbon Film	1 ohm 1/4 W J	3069109270	1	
		A'ssy P.C. Board Voltage Selector				
⚠	52	Selector Voltage		4618006610	1	B(Only)
⚠	53	AC Outlet		4448103210	1	A, B
⚠		AC Outlet		4448103610	1	C,D,F,G
⚠		AC Outlet		4448105510	1	KS
	CP601	Wafer, LV 2P		4428525780	1	
⚠	F1	Fuse, T 500 mA, 125 V		5508301635	1	A
⚠		Fuse, T 315 mA, 125 V		5508301435	1	B
⚠	F2	Fuse, T 315 mA, 250 V		5508301434	1	D
⚠		Fuse, T 160 mA, 250 V		5508301035	1	B
⚠		Fuse, T 1 A, 250 V		5508302035	1	D
		Fuse, T 315 mA, 125 V		5508301435	1	DOM
		Clip Fuse		4255001010	4	

PRODUCT SAFETY NOTICE

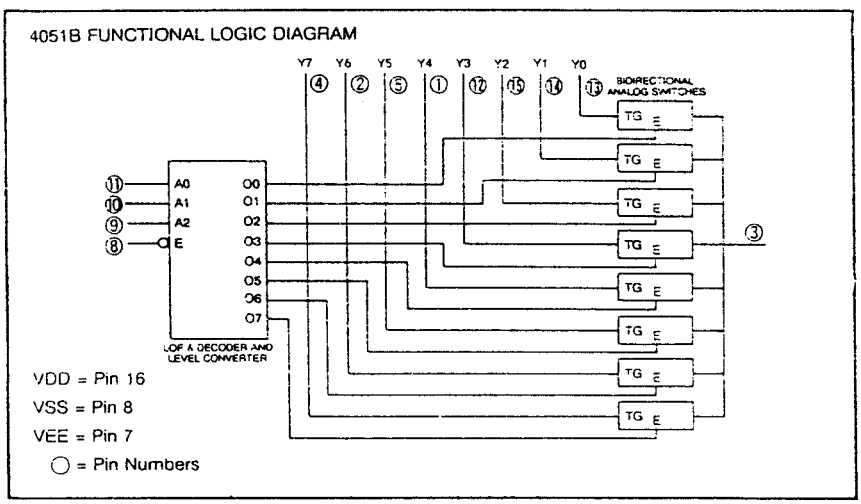
Each precaution in this manual should be follower during servicing. Components identified with the IEC symbol ⚠ in the parts list and the safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insuiated from the supply circuit before returning the product to the customer.

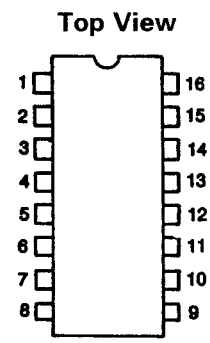
IC'S LEAD IDENTIFICATION AND INTERNAL DIAGRAM

GD4051BCP: IC401

Inputs				Channels							
E	A_2	A_1	A_0	Y_0-Z	Y_1-Z	Y_2-Z	Y_3-Z	Y_4-Z	Y_5-Z	Y_6-Z	Y_7-Z
L	L	L	L	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
L	L	L	H	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
L	L	H	L	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
L	L	H	H	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
L	H	L	L	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
L	H	L	H	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
L	H	H	L	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
L	H	H	H	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
H	X	X	X	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

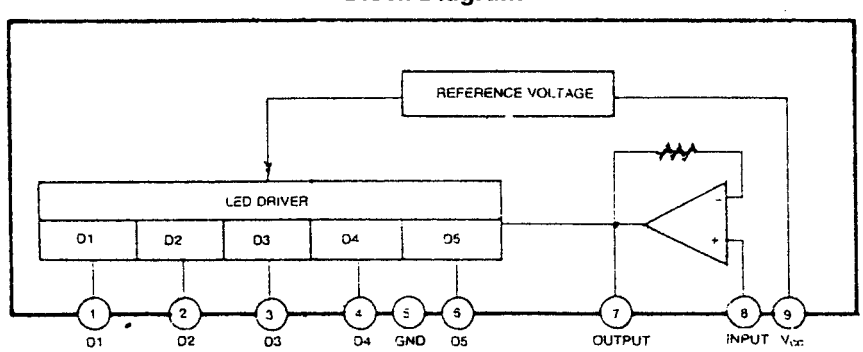
L=Low Level H=High Level X=Don't Care





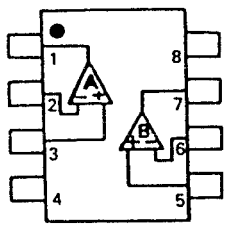
KA2284 (LED DRIVER): FRONT IC501, 502

Block Diagram



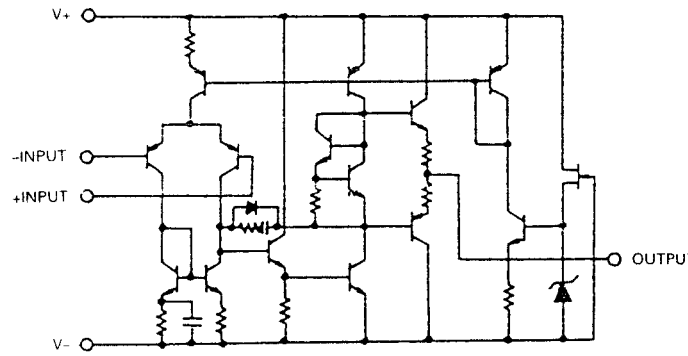
NJM2068 : IC201, 202

(TOP VIEW) Internal Diagram



1. A OUTPUT
2. A −INPUT
3. A +INPUT
4. V−
5. B+ INPUT
6. B− INPUT
7. B OUTPUT
8. V+

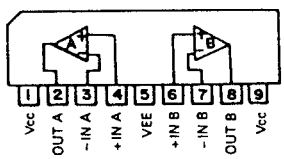
Equivalent Circuit



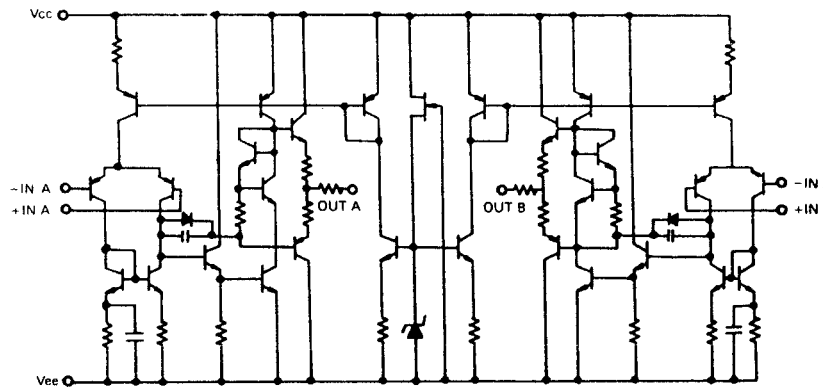
KIA4559S(6559) : IC302

Internal Diagram

KIA 4559S

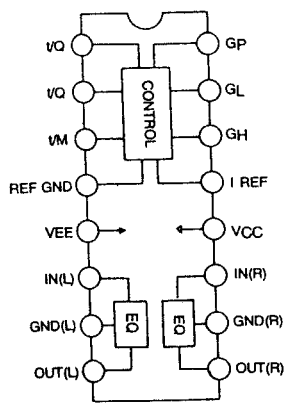


Equivalent Circuit

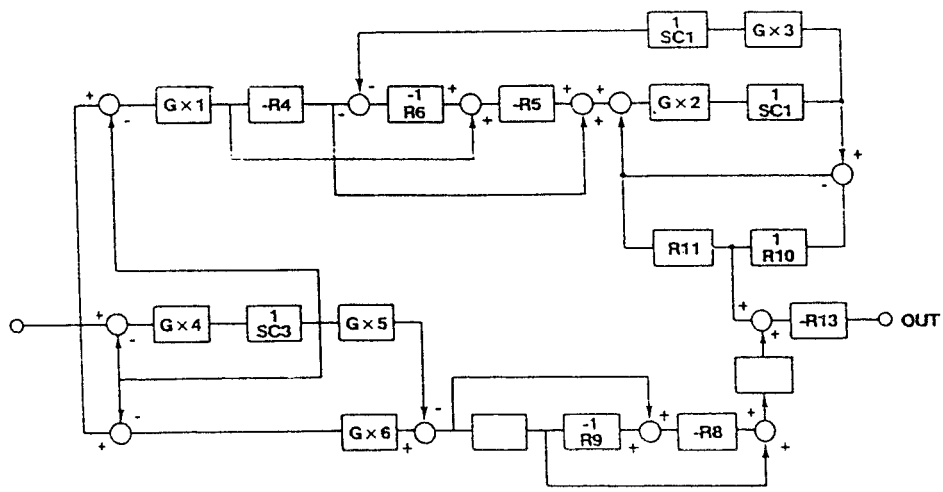


CXA1198A : IC402

Internal Diagram

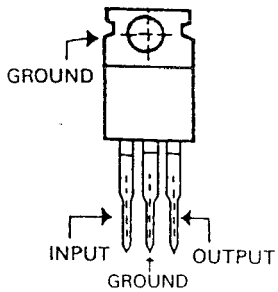


Block Diagram

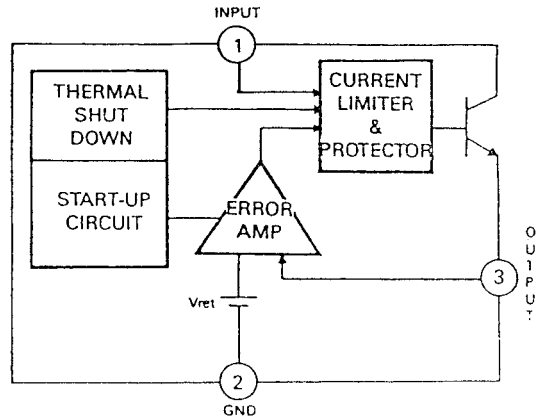


KA78XX : IC101, IC103

Front View

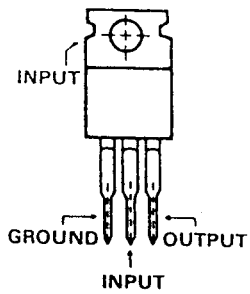


Block Diagram

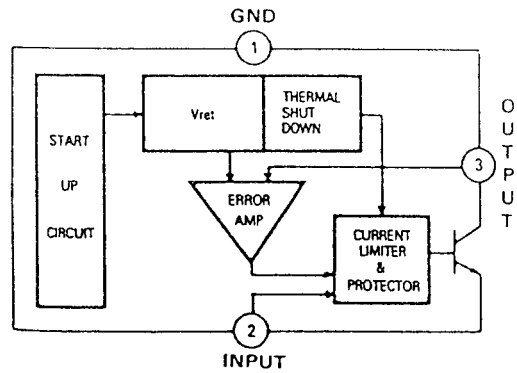


KA79XX : IC 102

Front View

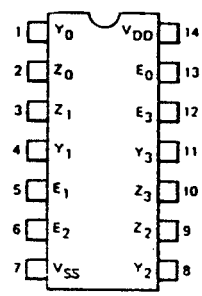


Block Diagram



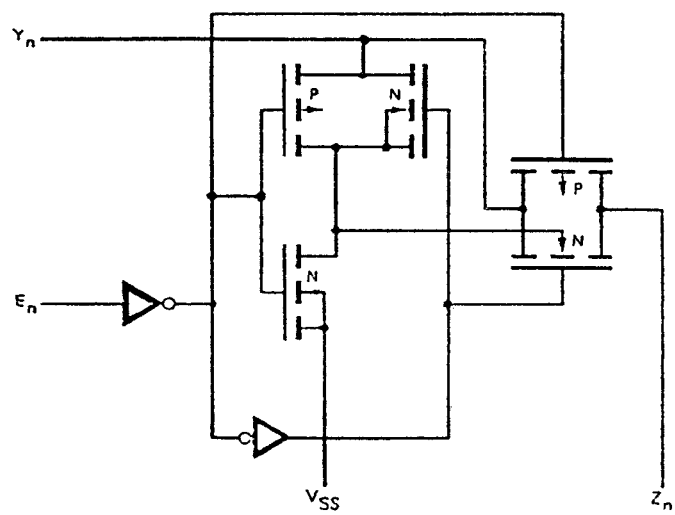
GD4066B (A AND B DECKS SW) : IC203

Pin Connection



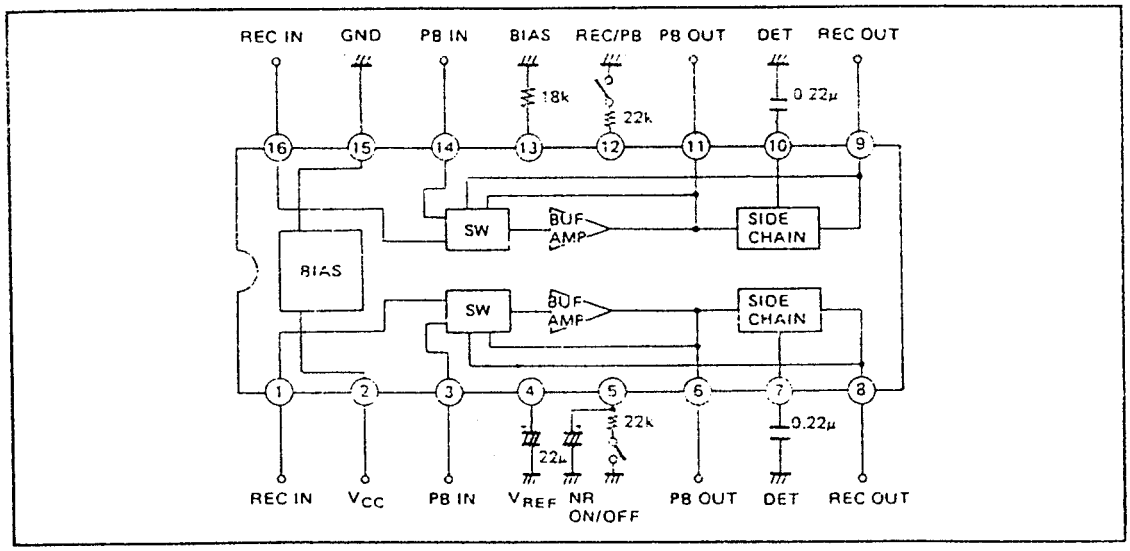
Note: The SO package has the same pinouts(Connection Diagram) as the dual in-line package.

Block Diagram

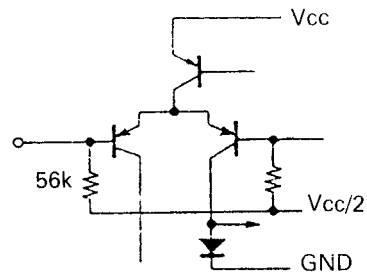
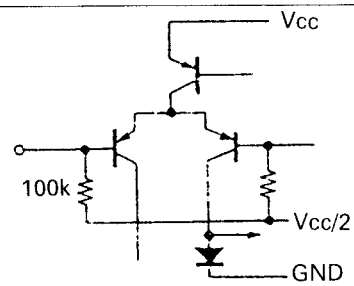
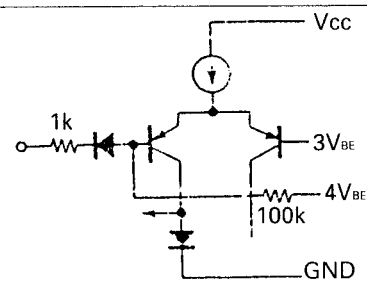


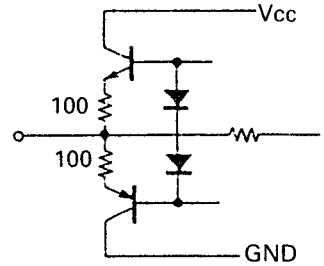
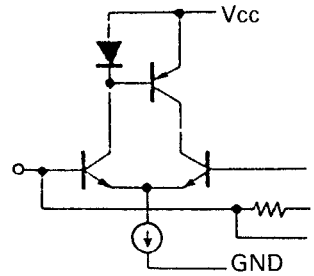
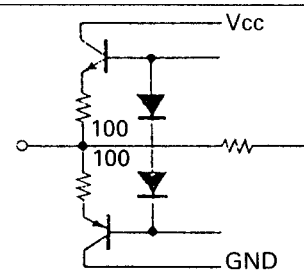
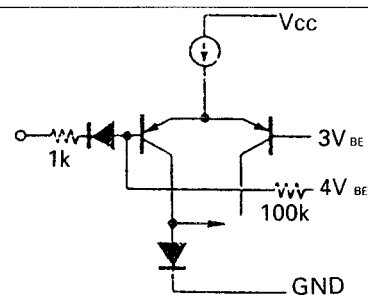
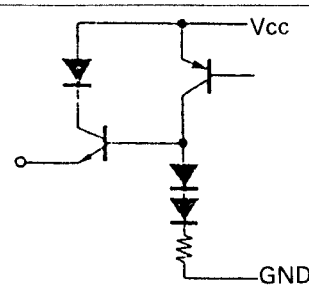
HA12136A : IC301 (Dolby-B Type noise reduction system)

1. Block Diagram



2. Pin Function

Pin No.	Signal	R(in)	V_{DC}	Equivalent Circuit	Remark
1.16	REC IN	56 kΩ	6.0V		Recording(Encode) input
2	Vcc	–	12.0V		Power supply
3.14	PB IN	100 kΩ	6.0V		Playback(Decode)input
4	V_{REF}	–	6.0V		Reference voltage
5	NR ON/OFF	–	–		Mode control pin for NR ON/OFF "H"→NR ON "L"→NR OFF

Pin No.	Signal	R(in)	V_{DC}	Equivalent Circuit	Remark
6.11	PB OUT	–	6.0 V		Playback(Decode) output
7,10	DET	–	1.3V		Time constant pin for the level detector
8,9	REC OUT	–	6.0V		Recording(Encode) output
12	REC/PB	–	–		Mode control pin for REC/PB(Encode/Decode) "H"→REC (Encode) "L"→PB (Decode)
13	BIAS	–	1.0V		Reference current input put for the active filters
15	GND	–	0V		Ground

SCHEMATIC DIAGRAM

Model No. : DD-2040

NOTES

1. Resistor values are indicated in ohms unless otherwise specified (K=1,000 M=1,000,000)
2. Capacitor values are indicated in microfarades unless otherwise specified. (p=micro-microfarades)

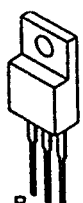
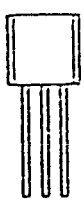
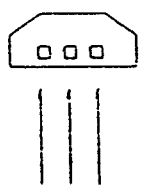
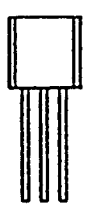
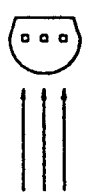
CAUTION

Safety precaution to be followed during servicing

1) Since those parts marked with △ are critical parts for safety, use only the one described in the parts list

2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

TRANSISTORS LEAD IDENTIFICATION

Transistor	Front View	Bottom view
KTC 1815Y/KTC3198 KTC 2236AY KTD 1302	 E C B	 E C B
KTB1366	 B C E	 B C E
DTC114YS DTC114TS	 E C B	 B C E
MPSA 06 MPSA 56	 E C B	 E B C

TERMINAL NAME

B→BASE
C→COLLECTOR
E→EMITTER